User Manual

# MDWorkflow

## Web Application
## from
## Midrange Dynamics

(Version 6.9)

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# 1 Introduction

## 1.1 Product Overview

The Workflow Application is a web application that runs on an application server. The web application connects with a MDCMS database repository on an IBMi system, where the data and business logic for the application resides.

The key features of the Workflow Application:

- Project Management
- Task Management
- Role Management
- Management of Testing Requirements at each step of the Workflow Process
- Detailed History of Installed Objects and Object Packages
- Object Migration tracking across all systems
- Object Version and Conflict Reporting across all systems
- Application Version tracking and Management
- Graphical Calendar/Scheduler for past and future Installations and Tests

## 1.2 Logging into the Workflow Application

A web browser is used as the client for the Workflow Application. The URL for the Web App is provided by your application's administrator.

You must have a user profile on the IBMi system that the MDCMS Workflow repository resides on. A profile is not necessary on any other partitions or physical IBMi systems in order to use the Workflow Application.

If the Workflow Application is configured to prompt for the user id/password, then a login screen will be displayed. Enter your IBMi user id and password at the prompt.

If the Workflow Application is configured to use your network profile, then your network profile will be mapped to the IBMi user id and you will be automatically logged in.

Up to 5 concurrent windows may be active for the same browser session, allowing for multiple windows to be open while only logging in once.

It is strongly recommended to use the Close link to cleanly end the processes when you are finished using an MDWorkflow session. If there is no activity for the session for 2 hours, the session will automatically end.

## 1.3 Navigation

The web pages use a consistent look and feel across the entire application. The following concepts are utilized to navigate through the pages:

**Navigation Panel**

| | |
|---|---|
| **Links** | Entries within the Links section at the top left of the screen allow you to navigate to that process described by the link. The Project Listing link appears on every page (except the Project Listing page itself), allowing you to return to the initial screen at any time. |
| **Options** | Entries within the Options section at the middle left of the screen list each option available for a row within a list, based on your personal authorization rights. Each row contains a radio button. First click the radio button for the row you wish to process and then click the option to be performed. |
| **Help** | The User Guide link may be accessed to launch this User Manual if you need to obtain help about a particular screen. |
| **Change Password** | If the login occurs using a password, the password can be changed by clicking on this link |
| **Close** | Cleanly end the active thread on the IBMi for this browse window. If other threads are still active, the IBMi job MDRPxxxxxx remains active and a new thread can be started without the need to provide credentials. If this was the final thread, the IBMi job MDRPxxxxxx will cleanly end and login credentials will need to be provided the next time MDWorkflow is accessed. |

**Screen Body**

| | |
|---|---|
| **Buttons** | Blue rectangles provided to carry out an action when left clicked |
| **Filter Fields** | At the top of most listing screens values may be entered into filter fields to limit the listing to rows matching those values. The Reset button will clear the values from the filter fields. The Search button will refresh the listing using the filter values. The Report button will create an Excel file containing the rows matching the filter values. |
| **Position Field** | Directly above one or more columns of most lists, there is a right arrow and an entry field allowing you to reposition the list based on the value for that column. Enter a value into the field and then click the right arrow to reposition the list. |
| **Column Sorting** | The column headings of the lists may be clicked to sort the lists by that column. Clicking the column again will toggle the sort sequence between ascending and descending values. Only the currently loaded rows (max. 200) will be resorted. |
| **Clickable Fields** | fields displayed in blue may be clicked in order to navigate to a screen relevant to the value of that field. For the primary column in a list, clicking on a field will cause the first available option for that row to be processed. |
| **Magnifying Glass** | when available, a magnifying glass icon will be displayed to the right of a field. By clicking on the icon you can select a value for the field from a list of valid values. |
| **Envelope** | when available, an envelope icon will be displayed to the right of a user or group field. By clicking on the icon an email will be sent to that user or group of users. |
| **Paginator** | If a list contains more than 20 entries, a paginator will be displayed below the list between pages of entries. Click a number to go to a specific page index. Click a narrow arrow to go to the next or prior page. Click a wide arrow to go to the first or last page. |

**Common Buttons**

| | |
|---|---|
| **Add** | Add a new entry to the list |
| **Refresh** | Refresh the list information based on the current filter values |
| **Report** | Create an Excel report containing all rows matching filters for the list. The columns in the report can be customized using the Report Settings link |
| **Reset** | Remove all values from the Filter Fields and refresh the listing |
| **Search** | Refresh the list information based on the current filter values |

**Common Options**

| | |
|---|---|
| **Add** | Add a new entry to the list |
| **Edit** | Edit the information for the entry |
| **Copy** | Copy entry to a new entry |
| **Delete** | Delete the entry |
| **View** | View the entry |

# 2 Workflow Settings

The following settings are maintained by clicking on the Settings link from the initial Project Listing screen. These settings are used to configure the Workflow processes and involved entities to match the requirements of your organizational needs.

## 2.1 Group Types

Group types categorize each kind of user group that will be involved with the Workflow processes.

**Fields**

| | |
|---|---|
| Group Type | A 10 character code used to uniquely identify the type |
| Description | A description of the Group Type. For example: Developer, Business User, Release Manager, Project Manager, etc... |

**Options**

| | |
|---|---|
| Groups | List and Manage all groups defined for this Group Type |

## 2.2 Groups

The list of each distinct user group involved with the Workflow processes.

**Fields**

| | |
|---|---|
| Group | A 10 character code used to uniquely identify the group |
| Group Type | A 10 character code used to uniquely identify the type of group |
| Description | A description of the Group. For example: Developer Team 1, Developer Team 2, Accounting Users, Release Manager Back Office, etc... |
| Users | The number of users in the Group. This number may be clicked in order to view/modify the users in the Group. |

**Options**

| | |
|---|---|
| Users | List and Manage all users defined for this Group |

## 2.3 Required Acceptance Group Types per Level

For each MDCMS Promotion Level, between 0 and n types of groups can be designated to be responsible for the acceptance of an installed RFP into that level. This means that each time an RFP, which is a package of objects, is installed into a specific level, 1 person from a group for each required group type must accept the results of the installation before that object package will be allowed to move on to the next step in the Workflow process.

Example:
MDCMS Promotion Level 50 is defined as the User Acceptance Environment level. When objects are installed into this level, business users and IT management must test the environment before those objects are allowed to be installed into the Production Environment level. To ensure that this occurs, group types BUS_USER and IT_MGMT are specified as Required Acceptance Group Types for level 50. Then, whenever an RFP is installed into level 50, a user within a group of type BUS_USER and a user within a group of type IT_MGMT must accept the RFP before it can be sent to Production.

**Fields**

| | |
|---|---|
| Application | MDCMS Application |
| Location | The IBMi Location of the Promotion Level |
| Level | The MDCMS Application Promotion Level |
| Group Type | The type of group that must accept the results of an installation into the given Level |
| Description | Description of the Group Type |

## 2.4 Task Types

Task types categorize each kind of task that could be opened for a project. This allows for the simple filtering of tasks based on the type of task.

**Fields**

| | |
|---|---|
| Task Type | A 10 character code used to uniquely identify the type |
| Description | A description of the Task Type. For example: Issue, Migration Request, Rollback, etc… |

## 2.5 Object Group Levels

Object Group Levels define the environments where Object Group versioning should be enabled. Object Groups are collections of objects that reside within a library or across libraries or within an Application or across Applications. Workflow can track and increment the version of those collections as installations occur into the defined Levels.

**Fields**

| | |
|---|---|
| Location | The IBMi Location of the Promotion Level |
| Level | The MDCMS Promotion Level |
| Description | A description of the level, since the object groups may span applications |
| Group Required | Flag specifying if an object must belong to at least 1 group before it may be installed |

**Options**

| | |
|---|---|
| Object Groups | List and Manage all Object Groups defined for this Level |
| Manually Attached Objects | List and Manage all Manually Attached Objects defined for this Level |

## 2.6 Reports

The fields to be included in each of the Excel reports can be defined here.

The list of available Reports are:

Project Listing
Task Listing
Subtask Listing
RFP Listing
Installed RFP Listing
RFP Installation Schedule
Object Listing

The value for the Fields column will indicate if all fields are included within the Report or if a subset of fields (custom) are included in the Report. Clicking on the Report will bring up the Report Fields view where a checkbox will indicate if the Field value is included in the Report or excluded(unchecked).

## 2.7 Email Addresses

The email address table for users involved with the workflow process that may need to be able to receive an email from the tool. The MDMAIL and MDMAILF APIs also use this table for any in-house use of the API, such as within an MDCMS Exit Point.

**Fields**

| | |
|---|---|
| User | The user profile of a user that is registered in MDSEC on the Repository partition |
| Name | Name of user defined in MDSEC |
| Email Address | The address to be used to send emails to this user |

## 2.8 Email Settings

The connection settings necessary to connect the java SMTP client on each IBMi system to the SMTP server.

**Fields**

| | |
|---|---|
| Location | The IBMi location |
| SMTP Host | The TCP/IP address/hostname of the SMTP server |
| SMTP Port | The port number to connect to for SMTP requests |
| SMTP User | The user id for authentication on the SMTP server |
| SMTP Password | The password for authentication on the SMTP server |
| SMTP Auth Required | Flag specifying if the SMTP server requires authentication |
| Email Address | The address to use as the sender |
| SMTP Logging | Flag specifying if logging should be performed. If performed, the log will be written to QPRINT for the MDMAIL job on the IBMi system. |
| Use SMTPS | Flag specifying if SMTP Secure (SSL) should be used for the connection to the SMTP server |
| Minimum Limit in KB to ZIP Attachments | *ALWAYS – always ZIP an attachment before sending, regardless of size<br>*NEVER – never ZIP an attachment, regardless of size<br>1 – 9999999 – ZIP all attachments larger than the entered size in kilobytes |
| MDWorkflow URL | The context path for links to the MDWorkflow application. This must include http or https, the server address, port number if not 80 and the name of the web application.<br>Example: http://server.com:8080/mdWorkflow<br>This URL is used within MDMAILF email bodies to allow the user to navigate directly to a specific RFP and is used when generating Project, Task or Subtask mails out of MDWorkflow. |

# 3 Projects

## 3.1 Project Listing

The Project Listing is the initial screen shown once the user has logged into the Workflow Application. The listing is filtered by various fields, whose values are remembered from the previous session.

**Options**

| | |
|---|---|
| Project Tasks | List and Manage all Tasks defined for this Project |
| Active RFPs | List and Manage all active (not yet installed or cancelled) RFPs that contain at least 1 object assigned to this Project |
| Installed RFPs | List and Manage all Installed RFPs that contain at least 1 object assigned to this Project |
| Project Objects | List all Object Requests assigned to this Project |

## 3.2 Project Detail

A project describes a body of work to be performed by one or more users in order to fulfill an IT requirement. The project can contain a number of tasks and subtasks to further describe the work to be performed. If the user has been granted the necessary authority in MDSEC, a Project may be created or edited within the Workflow Application.

**Fields**

| | |
|---|---|
| Project | A 12 character identifier for the Project |
| Application | The primary MDCMS Application impacted by the Project. MDCMS allows objects belonging to various applications to be assigned to the same Project. |
| Project Title | A brief description of the Project |
| Requester | The creator of the Project. Send project information to the creator by clicking the envelope. |
| Creation Date | The date/time that the Project was created |
| Completion Date | The expected completion date, and time, of the Project |
| Priority | The priority that the Project has in relation to other Projects |
| Status | 1 – Project Opened – work has not yet begun on behalf of the Project<br>2 – Project Authorized – the Project has been authorized to be performed<br>3 – Work in Process – the Project is actively being worked upon<br>4 – Ready for Testing – the coding is complete and testing may commence<br>5 – Testing Complete – Results of Project testing are positive<br>6 – Project Complete – the Project is complete<br>9 – Project Cancelled – the Project has been cancelled, nothing will be installed |
| Project Description | A detailed description of the Project |
| Involved Users | See detailed description in section 3.2.1 below |
| Attachments | See detailed description in section 3.2.2 below |
| Comments | See detailed description in section 3.2.3 below |
| Status History | Date, Time, Status, User ID and User Name for all Project related events |

### 3.2.1 Involved Users for a Project

For each Project, the users that are to be involved with the Project can be defined.

There is no limit to the number of User Groups assigned to a Project. At a minimum, there must be at least 1 User Group defined for each Group Type that is responsible for testing the results of an installation into the MDCMS levels that require testing acceptance.

The user managing the Involved Groups for a Project may click the Save as Default button. This will indicate to MDCMS that the current Group configuration should be automatically used when future Projects are created by the same user.

**Fields**

| | |
|---|---|
| Role | Technical – the group is responsible for carrying out the Project tasks<br>Acceptance/Test – the group is responsible for testing and accepting the results of installations. |
| Group Type | The type of group to be involved. The group types are defined from the settings menu. By default, all group types required for installation acceptance are displayed. Additional group types may be added to the list for a Project. |
| Required | If the Project requires that a Group of the given Group Type be assigned to the Project in order to accept the results of installations |
| Group | The Group of the given Group Type involved with the Project. The group id may be clicked to view/maintain the members of the group. The Group is not required for Technical roles. |
| User | If only a specific member of the Group should be involved, then the ID of the user is defined. Otherwise, any member of the Group may be involved. |
| Change | Click to change the Group or User for the Group Type |
| Delete | Click to delete the Group Type entry |

### 3.2.2 Project Attachments

Files may be attached to the project. An attached file is centrally stored in IFS in folder /MDCMS/ProjectDocs for shared use by members of the project.

First click the Choose File button to select a file and then click the Add Attachment button to upload the file to the server.

Attached files can be removed from the Project by clicking the red X.

### 3.2.3 Project Comments

Comments may be added to the Project by clicking the Add New Comment button.

Existing comments can be viewed in full by clicking the Date of the Comment. If the comment was created by the current user, the comment can also be edited or deleted.

Comments can be navigated by clicking on the Next Comment and Prior Comment buttons.

### 3.3 Project Task Listing

The Task Listing displays the individual tasks and subtasks that have been defined for a Project. The listing is filtered by various fields, whose values are remembered from the previous session.

The Task Listing can also display tasks across projects by clicking the Task Listing link from the Project Listing.

If a reference to an external Issue Management tool has been configured in the Web Application, the corresponding reference number may be clicked from the list, which will result in a new browser window opening to the URL of the reference number for that tool.

**Options**

| | |
|---|---|
| Subtasks | List and Manage all Subtasks defined for this Task |
| Active RFPs | List and Manage all active (not yet installed or cancelled) RFPs that contain at least 1 object assigned to this Task |
| Installed RFPs | List and Manage all Installed RFPs that contain at least 1 object assigned to this Task |
| Task Objects | List all Object Requests assigned to this Task |

### 3.4 Project Subtask Listing

The Subtask Listing displays the individual subtasks that have been defined for a Task. The listing is available from the Task Listing or from Task Detail.

The functionality for Subtasks is the same as for tasks. Subtasks are recommended when portions of a task are to be carried out by multiple people or when multiple RFPs should be linked to a task. Details of linked RFPs can be viewed by clicking on the RFP number from the Subtask listing.

**Options**

| | |
|---|---|
| Active RFPs | List and Manage all active (not yet installed or cancelled) RFPs that contain at least 1 object assigned to this Subtask |
| Installed RFPs | List and Manage all Installed RFPs that contain at least 1 object assigned to this Subtask |
| Task Objects | List all Object Requests assigned to this Subtask |

### 3.5 Project Task/Subtask Detail

**Fields**

| | |
|---|---|
| Project | The identifier of the Project that the task belongs to |
| Project Title | The title of the Project |
| Task | An automatically generated task number |
| Description | Task Description |
| Subtask | An automatically generated subtask number |
| Reference | The reference number for an external Issue Management tool belonging to the customer |
| Task Type | The type or category of the task. The task types can be defined in the settings menu |
| Requester | The User that created the task. Task information can be sent to the user by clicking the envelope. |
| Priority | The relative priority, from 1 (critical) to 5 (optional) |
| Status | Created – Task Created<br>Modified – Task Modified<br>Sent – An email has been sent using the MDMAIL API on the IBMi system<br>Work In Progress – Work on behalf of the task is in progress<br>Ready to Test – Programming for the task is complete and ready for testing<br>Testing in Progress – Testing of changes is in progress<br>Testing Complete – Testing of changes is complete<br>Closed – The task is complete, finished or done<br>Cancelled – The task will not be performed |
| Due Date | The intended date by which the task should be complete |
| Due Time | The intended time by which the task should be complete |
| Description | A detailed description of the task. This can include programmer and testing notes |
| Application | The MDCMS Application impacted by the task |
| Location | The IBMi system impacted by the task |
| Level | The MDCMS Application Promotion level impacted by the task |
| Assign to Group | The group responsible for carrying out the task. Send task information to all users in the group by clicking the envelope. |
| Assign to User | A specific user in the group responsible for carrying out the task. If blank, then any user in the group may be involved. Send task information to the user by clicking the envelope. |
| Test Group | The group responsible for testing the results of the task. Send task information to all users in the group by clicking the envelope. |
| Test User | A specific user in the group responsible for testing the results of the task. If blank, then any user in the group may be involved. Send task information to the user by clicking the envelope. |
| Hours expected | The number of hours expected to be required to complete the task |
| Hours used | The number of hours actually used to complete the task |
| Subtasks | The number of subtasks existing for the task |
| Subtask Hours Expected | A sum of the hours expected across all subtasks for the task |
| Subtask Hours Used | A sum of the hours used across all subtasks for the task |
| Attachments | See detailed description in section 3.2.2 |
| Comments | See detailed description in section 3.2.3 |
| Status History | Date, Time, Status, User ID and User Name for all Task/Subtask related event |

### 3.6 RFPs for a Project or Task

The list of all RFPs (Installation Packages) that contain at least one object assigned to the Project, Task or Subtask.
The list may be filtered to display RFPs for any of the following status codes:

blank – All RFP's
*A – Any active status
RP – Request Pending
00 – No Requests assigned
01 – Requests assigned
SP – Submission Pending
YY – Submission in JOBQ
XX – Submission in Progress
02 – Waiting for Approval
03 – Waiting for Installation
IP – Installation Pending
04 – Installation in JOBQ
XY – Installation in Progress
05 – Installed
09 – RFP Closed without Install

Within the list the RFP number (or Created date) can be clicked for more information about the RFP.

The Test Status value, if available, can be clicked for information and management of the workflow for the testing of the RFP.

More information about the RFP can be found in section 4.2 titled RFP Detail.

### 3.7 Objects for a Project or Task

The list of all Objects assigned to the Project, Task, or Subtask that have been installed or are waiting to be installed.
The list can be filtered to display Object Requests for any of the following status codes:
*A – Any Active Status
RP – Request pending
00 – Object requested
01 – Assigned to RFP
02 – Waiting for approval
03 – Ready to be installed
04 – Installation in progress
05 – Installation complete

Within the list, the Object name can be clicked for more information about the Object and the RFP number can be clicked for more information about the RFP.

More information about the Object information can be found in section 5.2 titled Object Detail.

# 4 RFPs

## 4.1 RFP Listing

The RFP Listing displays MDCMS installation packages across IBMi systems. The listing is filtered by various fields, whose values are remembered from the previous session.

**Options**

| | |
|---|---|
| RFP Objects | List all Objects assigned to the RFP |
| Object Groups | List the object groups impacted by the Installed RFP along with the version for each group as a result of the installation |
| Test Status | View and update the Test Status for the RFP |

## 4.2 RFP Detail

An RFP identifies a collection of objects that are to be installed together into the same application environment level. If the user has been granted the necessary authority in MDSEC, an RFP may be created, edited, approved or rejected within the Workflow Application.

**Fields**

| | |
|---|---|
| Application | The MDCMS Application code |
| Location | The IBMi MDCMS Repository Location |
| Level | The MDCMS Promotion Level at the given location correlating to a specific environment for the application (such as Development, Test, or Production) |
| RFP | The automatically generated RFP number. The RFP is used only once for the migration of objects into the specified environment. |
| User | The user assigned to the RFP |
| Status | RP – Request Pending – The RFP is waiting to be activated. The installation into the prior level has not yet been accepted.<br>00- No Requests Assigned – no objects have been assigned to the RFP<br>01 – Requests Assigned – 1 or more objects are assigned to be migrated when the RFP is installed<br>SP – Submission Pending – The RFP has been requested to be submitted, but has not yet been placed in the job queue<br>YY – Submission in job queue – once the queue is freed, the RFP submission process will begin<br>XX – Submission in progress – the submission job is active. The submission job compiles the source code, if necessary, and places the objects in a temporary library pending installation.<br>02 – Waiting for Approval - Submission is complete and approval of the RFP is necessary before the RFP can be installed. If the user is authorized, the user may press the Approve button within the Workflow application to approve the RFP<br>03 – Waiting for Installation – Approval is complete and the RFP is waiting to be requested to be installed<br>IP – Installation Pending – The RFP has been requested to be installed, but has not yet been placed in the job queue<br>04 – Installation in job queue. When the job queue is freed, the RFP installation process will begin<br>XY – Installation in progress – the installation process is active<br>05 – Installed – Installation Complete<br>09 – RFP Closed without any Installation occurring |

| | |
|---|---|
| From RFP | The previous RFP that this RFP was created from |
| Test Status | Ongoing – Testing in progress and results are not yet complete<br>Accepted (Provisional) – Test Users have accepted the results of the test but confirmation has not yet occurred<br>Accepted – Test acceptance has been confirmed. The next step in the Workflow process may occur.<br>Accepted (Provisional) – Test Users have accepted the results of the test but confirmation has not yet occurred<br>Accepted – Test acceptance has been confirmed. The next step in the Workflow process may occur.<br>Rejected (Provisional) – Test Users have rejected the results of the test but confirmation has not yet occurred<br>Rejected – Test rejection has been confirmed. The next step in the Workflow process will not occur. |
| Description | A description of the RFP |
| Delete Source from Programmer Library | Flag specifying if the source should be deleted from the programmer library once it installed into the specified environment level. This flag is only applicable for the development environment |
| Delete Object from Programmer Library | Flag specifying if the objects should be deleted from the programmer library once they are installed into the specified environment level. This flag is only applicable for the development environment |
| Delete Job Log when no Warnings occur | Flag specifying if the job log that is generating during the installation of an RFP should be deleted, if no errors or warnings occurred during the installation process. |
| Create Requests for next level | Flag specifying if the objects for this RFP should be automatically requested for the next level at the same location, once the installation is complete for this level |
| Assign new RFP to next level Requests | Flag specifying if a new RFP should be automatically generated and assigned to the objects for the next level |
| Place RFP in Send List | Flag specifying if the RFP should be placed in the send list when distribution queues are defined for the specified level |
| Date Created | The date that the RFP was created |
| Time Created | The time that the RFP was created on the date |
| Submission Date | For Open RFPs: The date the RFP should be submitted<br>For Submitted RFPs: The date the RFP was submitted |
| Submission Time | For Open RFPs: The time the RFP should be submitted<br>For Submitted RFPs: The time the RFP was submitted |
| Installation Date | For Open RFPs: The date the RFP should be installed<br>For Submitted RFPs: The date the RFP was installed |
| Installation Time | For Open RFPs: The time the RFP should be installed<br>For Submitted RFPs: The time the RFP was installed |
| Reserved until Date | The date until which the environment should be reserved for testing of the RFP. The block of time between the Installation Date and the Reserved until Date is displayed on the Installation Calendar as time reserved for testing. This field is merely informational and does not block further work from being performed. |
| Reserved until Time | The time until which the environment should be reserved for testing of the RFP. |

**RFP Detail Buttons**

| | |
|---|---|
| Approve | Approve the installation of the RFP. The status of the RFP will be set to 03-Waiting for Installation. If Auto-Install is set to true for the level, the RFP will be installed immediately |
| Reject | Reject the RFP for installation. The status of the RFP will be returned to 01-Requests assigned |
| Objects | List the object requests assigned to the RFP |
| Projects | List the projects impacted by the object requests in the RFP |
| Tasks | List the tasks impacted by the object requests in the RFP |

## 4.3 RFP Objects

The list of all Objects packaged within the RFP.

**Options**

| | |
|---|---|
| Object Locations | List all locations where the object is found |
| Object Groups | List the object groups impacted by the Installed object along with the version for each group as a result of the installation |
| RFP Details | View details of the RFP that the object is assigned to |

More information about the object information can be found in the section titled Object Detail.

### 4.4 RFP Test Status

If at least 1 Group Type is defined to perform acceptance testing for a Promotion Level, then each RFP that is installed must be accepted before that RFP can continue to the next step in the migration process.

The current Test Status for an RFP is displayed in the RFP listing and in the RFP detail. The user may click on this status to view or enter the results of the testing performed for the RFP.

If the Test Status is blank, then either the RFP is not yet installed, or the RFP is for a level that does not require testing.

The Test Status view lists each Project that is impacted by the RFP and the status of the testing by the Acceptance Groups assigned to the Project for the RFP's Level.

**Header Fields**

| | |
|---|---|
| Application | The MDCMS Application code |
| Location | The IBMi MDCMS Repository Location |
| Level | The MDCMS Application Level at the given location correlating to a specific environment for the application (such as Development, Test, or Production) |
| Test Status | Ongoing – Testing in progress and results are not yet complete<br>Accepted (Provisional) – Test Users have accepted the results of the test but confirmation has not yet occurred<br>Accepted – Test acceptance has been confirmed. The next step in the Workflow process may occur.<br>Accepted (Provisional) – Test Users have accepted the results of the test but confirmation has not yet occurred<br>Accepted – Test acceptance has been confirmed. The next step in the Workflow process may occur.<br>Rejected (Provisional) – Test Users have rejected the results of the test but confirmation has not yet occurred<br>Rejected – Test rejection has been confirmed. The next step in the Workflow process will not occur. |
| RFP | The automatically generated RFP number. The RFP is used for precisely 1 migration of objects into the given environment. Note: The RFP Description will appear to the right of the RFP number. |

**Project List Fields**

| | |
|---|---|
| Check Box | The check box will be displayed for a row if:<br>a) the RFP Test Status has not yet been confirmed and<br>b) the current user is a member of the defined Group and<br>c) either the defined user is blank so that anyone in the Group can edit the Status for the Project, or, the defined user is the current user |
| Project | The Project ID that is impacted by the RFP. The ID may be clicked to view more details about the Project |
| Group Type | The Group Type that is responsible for the acceptance of an installed RFP into the specified level. |
| Group | The Group that is assigned to the Group Type for this Project in order to test the results of the RFP. The Group may be clicked to view more information about the Group |
| User | If a value exists, then only this user may edit the status. If blank, then any user in the group can edit the status. |
| Status | The status for that Project. The status for all projects must be Accepted before the RFP Test Status of Accepted can be confirmed.<br>Only the status for 1 project must be Rejected before the RFP Test Status of Rejected can be confirmed. |
| Date | The date that the current status was set by the user |
| Time | The time that the current status was set by the user |
| Comment | A comment that will be applied to every checked row when a button is clicked. A comment is mandatory for rejected rows |

**Buttons**

| | |
|---|---|
| In Progress | Set every checked Project to status In Progress, signifying that you are in the process of testing for those Projects. |
| Accept | Set every checked Project to status Accepted, signifying that you have accepted the testing results for those Projects. |
| Reject | Set every checked Project to status Rejected, signifying that you have rejected the testing results for those Projects. |
| Undo | Undo the current status for the checked Projects. |
| Confirm Acceptance | Once all project rows have been accepted, the Confirm Acceptance button can be clicked by an authorized user to permanently set the RFP to accepted and to allow the next step in the Workflow process to occur for the RFP. |
| Confirm Rejection | Once 1 or more project rows have been rejected, the Confirm Rejection button can be clicked by an authorized user to permanently set the RFP to rejected and to remove any pending next steps from the Workflow process for the RFP. |
| Create Task | Once confirmed, the Task view can be requested for a Project with the RFP information automatically filled in. |

# 5 Objects

## 5.1 Object Listing

The Object Listing displays MDCMS Object Requests that are either currently active or have already been installed. The listing is filtered by various fields. The initial values for the filters will vary, depending on the source of the navigation to the Object listing (RFP, Project, Object Group, etc.)

**Options**

| | |
|---|---|
| Object Locations | List all locations where the object is found |
| Object Groups | List the object groups impacted by the Installed object along with the version for each group as a result of the installation |
| RFP Details | View details of the RFP that the object is assigned to |

## 5.2 Object Details

An RFP identifies a collection of objects that are to be installed together into the same application environment. If the user has been granted the necessary authority in MDSEC, an RFP may be created or edited within the Workflow Application.

**Header Fields**

| | |
|---|---|
| Object | The name of the object |
| Description | The description, if it is an IBMi object |
| Library/Path | The installation location for the Object. For an IBMi object, this would be the library, and for an IFS or remote object, this would be the folder path. |
| Source Library | The installation library for the IBMi source member |
| Source File | The installation source file for the IBMi source member |
| Object Type | The type of object |
| MDCMS Attribute | The attribute assigned to the request to dictate its handling (location, authority, exit points, etc...) |
| Application | The MDCMS Application code |
| Location | The IBMi MDCMS Repository Location |
| Level | The MDCMS Promotion Level at the given location correlating to a specific environment for the application (such as Development, Test, or Production) |
| From Level | The MDCMS Promotion Level that the object is migrated from. This will be blank if for the initial level or if received from another system. |
| RFP | The automatically generated RFP number used to install this object. The number may be clicked to view further information about the RFP. A description of the RFP appears to the right. |
| Request Date | The date that the object was checked out |
| Status | The status of the object (see RFP Status for all possible values) |
| Installation Date | The date that the object was installed |
| Installation Time | The time that the object was installed |
| Action | Modify – the object is new or will be changed<br>Delete – the object will be deleted<br>Recompile – the object will be recompiled due to file or copybook changes<br>Update – the existing object (such as an ILE program or Physical File) will be updated in place |
| User | The user who checked out the object. The full User description appears to the right. |

**Object List Fields**

| | |
|---|---|
| Project | The list of Projects that this object request is assigned to. The Project ID may be clicked to view more information about the Project. |
| Task | The Project Task that was used for the Object Request. The Task may be clicked to view more information about the Task. |
| Subtask | The Project Task's Subtask that was used for the Object Request The Subtask maybe be clicked to view more information about the Subtask. |
| Description | The Description of either the Project, Task or Subtask. |

## 5.3 Object Locations

This list allows you to view all libraries across all systems where an object of the same name and type are located.
**NOTE:** This list is only complete and accurate if the libraries are cross-referenced within MDXREF. This list is only applicable for OS/400 objects.

This list gives a good overview of where a particular object is located and how far it has migrated along the Workflow path.

**Fields**

| | |
|---|---|
| Location | The IBMi MDCMS Repository Location |
| Library | The library where the object resides |
| Attribute | The MDCMS Attribute assigned to the object |
| Create Date | The actual creation date according to the object description |
| Create Time | The actual creation time according to the object description |
| Source Date | The actual source change date according to the object description |
| Source Time | The actual source change time according to the object description |
| Source Library | The library containing the source at the time the object was compiled |
| Installation Date | The date of the most recent installation of the object. This date may be clicked to see the full details of the installation. |
| Installation Time | The time of the most recent installation of the object. |

# 6 Installation Calendar

The Installation Calendar allows you to view all past and future RFP installations across all systems.

The view is filtered by the following fields, whose values are remembered from the previous session:

RFP Status – The status of the RFP
Location – The MDCMS repository location
Application – The MDCMS Application code
Level – The MDCMS Application Level code
Object Name – The name of the Object
Project – The Project value
Task – The Project Task
Subtask – The Project Task's Subtask
Month
Year

The primary view shows the days of the current month.

A list view, titled ***RFP Installation Schedule***, can be viewed for RFP installations for a specific date and time by clicking on the link for Month (*Month yyyy*), Week (*Week nn*) or Day (*Day, mm/dd/yyyy*).

For each day, all RFPs that match the filter values and are part of the span of time between installation and the end of the *Reserved Until* value for the RFP are displayed. For RFPs that are not yet installed, the *Installation Date* and *the Reserved Until Date* can be scheduled in advance and then displayed in this view.

MDCMS uses varying colors for the RFPs to help optically separate the individual RFPs from one another.

The RFP may be clicked to view more information about the RFP.

# 7 Conflict List

The Conflict List is a function that allows for the listing of all objects in an MDXREF level. Additionally, where found, comparisons will be made with the objects in a second MDXREF level.

This function was created primarily for the following purpose:

Many companies receive updates to their business applications from a 3rd party vendor. The updates might typically be sent as a Save File containing a unique library known as a Delivery Library. If significant or frequent updates are being made to an application, there will often be several delivery libraries present on the development system. It can then be difficult to manage the status of the various deliveries and to ensure that the correct version of a duplicated object will be installed. The conflict list can be used to significantly help with the management of this situation.

The optimal way to make use of the conflict list is to create a level on the development system, such as 99, to be used to cross reference the objects that reside in the delivery libraries. This way MDXREF is aware of the contents of all of the deliveries and can list them as well as compare the objects to one another or to the Production level.

The Conflict List function is not limited to 3rd party deliveries and could be used for other purposes.

## 7.1 XREFBLDLIB API to Add Delivery Library to MDXREF

The XREFBLDLIB API can be used to automatically add a new delivery library to the MDXREF database. This command can then be built directly into the process used to restore the delivery library onto the system.

## 7.2 XREFRMVLIB API to Remove Delivery Library from MDXREF

The XREFRMVLIB API can be used to automatically remove a delivery library from the MDXREF database, once the library is no longer required. This command can then be built directly into the process used to delete the delivery library from the system.

## 7.3 Conflict List Settings

The settings for the Conflict List must be defined before the function can be used. The settings are available as a link from the Conflict List view.

**Fields**

| | |
|---|---|
| Application | The MDXREF application to contain the cross-reference information |
| Location of Delivery Libraries | The IBMi location containing the Delivery Libraries |
| MDXREF Level for Delivery Libraries | The MDXREF level number to contain the cross-reference information for the Delivery libraries |
| Location of Production Libraries | The IBMi location containing the Production Libraries |
| MDXREF Level for Production Libraries | The MDXREF level number to contain the cross-reference information for the production libraries |

## 7.4 Conflict List Listing

This view lists all objects located in the designated MDXREF Application and Level for deliveries (see Conflict List Settings).

The list can be filtered by a Library, Object, RFP, or differences in respect to Production.

If a value is entered for library filter, or if a library in the listing itself is clicked, the listing will be changed to show only objects in that library. Additional, all matching objects in other delivery libraries will be shown as well. This allows for the user to very easily see the duplicate objects among the various delivery libraries.

The same is true for the Object or RFP filter.

**Fields**

| | |
|---|---|
| Object | The name of the object |
| Attribute | The IBMi attribute for the object |
| Library | The name of the delivery library containing the object |
| Source Date Delivery | The source change date of the object in the delivery library |
| Source Time Delivery | The source change time of the object in the delivery library |
| Source Lib Delivery | The library containing the source at the time the object was compiled |
| Source Date Production | The source change date of the object in Production |
| Source Time Production | The source change time of the object in Production |
| Source Lib Production | The library containing the source at the time the object was compiled |
| Application/Level/RFP | The most recent MDCMS Application / Level / RFP used to migrate the object from the delivery library |

# 8 Object Group Versioning

## 8.1 Object Groups

An Object Group is an entity in MDCMS that allows for the logical grouping of objects within or across applications and libraries for the purpose of version tracking for that group of objects.

Per object group, a version number can be maintained and/or viewed. The version number may be set manually or automatically depending on object installation counts. Each group can have its own version incrementing scheme.

The MDCMS system locations and levels intended for the versioning of Object Groups is defined from the settings menu (Object Group Levels). Typically, the level(s) containing the production environment are used for versioning.

**Fields**

| | |
|---|---|
| Location | The location of the Object Group |
| Level | The MDCMS level of the Object Group |
| Object Group | The name of the Object Group |
| Description | A brief description |
| Current Version | The current version of the group. This may range from V0R0M0 to V999R999M999 |
| Automatic Versioning | If checked, the version will increment automatically based on the increment counters. Otherwise, the version will only change manually. |
| Version Number | The Version (primary) portion of the version. This is only editable if automatic versioning is turned off. |
| Release Number | The Release (secondary) portion of the version. This is only editable if automatic versioning is turned off. |
| Modification Number | The Modification (tertiary) portion of the version. This is only editable if automatic versioning is turned off. |
| Increment V every n Object Installations | The number of objects that must be installed for the group, before the Version number will be incremented by 1. Only applicable when automatic versioning is enabled. |
| Increment R every n Object Installations | The number of objects that must be installed for the group, before the Release number will be incremented by 1. Only applicable when automatic versioning is enabled. |
| Increment M every n Object Installations | The number of objects that must be installed for the group, before the Modification number will be incremented by 1. Only applicable when automatic versioning is enabled. |
| Object Installations since last V Increment | The number of objects installed since the last time the version number was automatically incremented. The Reset button may be used to return this value to 0. |
| Object Installations since last R Increment | The number of objects installed since the last time the release number was automatically incremented. The Reset button may be used to return this value to 0. |
| Object Installations since last M Increment | The number of objects installed since the last time the modification number was automatically incremented. The Reset button may be used to return this value to 0. |

## 8.2 Object Group Inclusion Rules

A set of rules can be defined to determine which group (or groups) each object belongs to as it is installed. The rules for each group would be searched to match against the object definition. Multiple rules may be defined per group.

Each rule consists of a number of inclusion filter fields. If a value is entered for an inclusion filter, then only objects matching that value will be marked as belonging to the Object Group. The object must match all entered inclusion values. Blank inclusion values will be ignored.

Each rule also consists of the same number of exclusion filter fields. If a value is entered for an exclusion filter, then only objects NOT matching that value will be marked as belonging to the Object Group. The object may NOT match any entered exclusion values. Blank exclusion values will be ignored.

**Fields**

| | |
|---|---|
| Rule | An automatically generated number to identify the rule |
| Application | The MDCMS Application |
| Library/Folder | The library or folder name where the object will be installed (*generic*) |
| Object Name | The name of the object (*generic*) |
| Object Type | The type of object |
| MDCMS Attribute | The MDCMS attribute used to install the object (*generic*) |

## 8.3 Manually Attached Objects

For each level where Object Groups are defined, the objects to be installed will be checked against the inclusion rules to see which Groups that the Object belongs to. If the object does not match any of the rules for any of the groups, and the installation level requires that each object must belong to a group, a pre-submission checking screen will notify the installer and the installation will not continue until each object belongs to at least 1 group.

Either the rules are updated so that the object will belong to a group, or the object can be manually attached to a group directly from the checking screen. The specific object will then automatically be attached to that same group for future installations.

In order to list the objects that are manually attached to an Object Group, a link is provided from the Object Group Levels settings view. If an object should no longer be manually attached in future installations, the Reuse Group flag can be disabled. Click the Save button once the flags have been set as needed.

## 8.4 Object Group Installation History

A listing of each RFP that has been installed which contains at least 1 object belonging to the Object Group.

**Fields**

| | |
|---|---|
| Install Date | Date of Installation |
| Install Time | Time of Installation |
| Application | MDCMS Application code |
| RFP | The RFP number – may be clicked to view more information about the RFP |
| Description | The RFP description |
| Version | The version number of the Object Group after all objects in the RFP had been installed |
| Object Count | The number of objects in the RFP belonging to the Object Group. Recompiled objects are not counted. The number may be clicked to see the list of objects. |

## 8.5 Objects in Object Group

All objects that have been installed which belonged to the Object Group at the time of the Installation.

More information about the object information can be found in the section Object Detail.

## 8.6 Object Groups for Object

When viewing the object detail for an installed object, the Object Groups link can be clicked to list all Object Groups that that Object was attached to for that installation.

# 9 Email APIs

## 9.1 Starting SMTP client

The SMTP client must be started on each IBMi system that is to issue emails. The command is **MDSTRMAIL** in library **MDCMS**.

**MDSTRMAIL Parameters**

| | |
|---|---|
| Environment ID (ENV) | The MDCMS instance to use. *DFT uses the default instance (MDCMS) |
| Submit Job (SBMJOB) | *YES – submit a new job to batch. This job will be named MDMAIL(instance)<br>*NO – run client using this job.<br>Additionally, the java bci job MDMAIL(instance) will be started |
| Job Queue (JOBQ) | The job queue to submit the new job to. A *JOBD value will submit to the job queue and subsystem as defined in the user profile submitting the job. |
| Job Queue Library (JOBQL) | The library of the job queue to submit the new job to |

## 9.2 Ending SMTP client

The SMTP client can be cleanly ended on each IBMi system that is to issue emails by using command **MDENDMAIL** in library **MDCMS**.

**MDENDMAIL Parameters**

| | |
|---|---|
| Environment ID (ENV) | The MDCMS instance to use. *DFT uses the default instance (MDCMS) |

## 9.3 Mailing Project or Task Information

When the user clicks on the envelope to the right of a user or group in the Project or Task detail screen, MDWorkflow invokes the MDMAILF command on the IBMi system that contains the connection repository for MDWorkflow.

The template that is used for generating the HTML body is named WorkflowProject.htm or WorkflowTask.htm. The location for these templates is, by default, IFS folder /MDCMS/MAIL. The location and/or file name can be modified by changing the value stored in data areas MAILPROJ and MAILTASK in library MDCMS(instance).

## 9.4 MDMAIL Command

This command, which resides in the MDCMS(instance) library, can be used to send a plain text mail to one or more recipients.

**MDMAIL Parameters**

| | |
|---|---|
| Email Address of Recipient (ADDR) | A specific email address |
| User Group of Recipients (GRPN) | A Workflow Group to send the email to<br>Possible values are *NONE, *RFP or a user defined Group Name.<br>The value *RFP is used in conjunction with parameter Group Type (GRPT) to send the email to all involved groups of given group type for the projects included in the RFP. |
| User ID of Recipient (USER) | The user id to send the email to. This email address is maintained within MDWorkflow settings |
| Message Subject (SUBJ) | The text to display in the subject of the email. |
| Body Text (BODY) | A free format string to be used as the mail body. MDCMS Wildcards may be used, if using the command from an RFP exit point. |
| Attachment 1 (ATT1) | Attachment #1 |
| Attachment 2 (ATT2) | Attachment #2 |
| Delete Attachments after Send (DELA) | Should Attachments for this email be deleted after sending. *YES to delete the Attachment and *NO to retain the Attachment. |
| MDCMS Instance (INST) | The MDCMS Instance to be used for this email. |
| Application (APPLIC) | The wildcard value of ##APPLIC## can be used to include the MDCMS Application Group when the command is used by an RFP exit point. |
| Level (PROLVL) | The wildcard value of ##PROLVL## can be used to include the MDCMS Application Promotion Level when the command is used by an RFP exit point. |
| RFP Number (RFPNBR) | The wildcard value of ##RFPNBR## can be used to include the RFP number when the command is used by an RFP exit point. |
| Group Type of Recipients (GRPT) | When the value of *RFP is used for the User Group of Recipients (GRPN) this value will specify the type of group to send to. Possible values are:<br>a user defined group type<br>*ACCGRP (default) – all Acceptance Groups for all Projects for the RFP,<br>*TECGRP – all Technical Groups for all Projects for the RFP<br>*TSKASN – all assigned groups/users for all tasks for the RFP<br>*TSKREQ – all creators for all tasks for the RFP<br>*TSKTST – all test groups/users for all tasks for the RFP |

## 9.5 MDMAILF Command

This command, which resides in the MDCMS(instance) library, can be used to send a pre-formatted plain text or HTML mail to one or more users.

HTML body templates for each of the primary RFP exit points are available in IFS folder /MDCMS/MAIL. If the template is to be used, the link context http://yourserver:8080/mdWorkflow needs to be replaced with the actual address and context name of the MDWorkflow web application.

**MDMAILF Parameters**

| | |
|---|---|
| Email Address of Recipient (ADDR) | A specific email address |
| User Group of Recipients (GRPN) | A Workflow Group to send the email to<br>Possible values are *NONE, *RFP or a user defined Group Name.<br>The value *RFP is used in conjunction with parameter Group Type (GRPT) to send the email to all involved groups of given group type for the projects included in the RFP. |
| User ID of Recipient (USER) | The user id to send the email to. This email address is maintained within MDWorkflow settings. |
| Message Subject (SUBJ) | The text to display in the subject of the email. |
| Body File including Path (BODY) | The IFS path, including file name, that contains the body to use in the email. |
| Body File Type (BTYP) | Specify if the email should be in HTML or TEXT format. |
| Attachment 1 (ATT1) | Attachment #1 |
| Attachment 2 (ATT2) | Attachment #2 |
| Delete Attachments after Send (DELA) | Should Attachments for this email be deleted after sending. *YES to delete the Attachment and *NO to retain the Attachment. |
| MDCMS Instance (INST) | The MDCMS Instance to be used for this email. |
| Use Wildcards (WCRD) | If any MDCMS wildcards that will need to be specifically referenced in the command string for the RFP exit point, this value must be set to *YES.<br><br>IMPORTANT: Any of the following wildcard values that will be used within the email body must be visible on the command line. This can be done from the command prompt by typing over a character of the parameter with the same character.<br><br>Since the length of a command string is limited, only include wildcards that will actually be used by the email body. |
| Application (APPLIC) | The MDCMS Application Group represented by the wildcard value of ##APPLIC##. |
| Level (PROLVL) | The MDCMS Application Promotion Level represented by the wildcard value of ##PROLVL##. |
| RFP Number (RFPNBR) | The RFP number for this promotion represented by the wildcard value of ##RFPNBR##. |

| | |
|---|---|
| Group Type of Recipients (GRPT) | When the value of *RFP is used for the User Group of Recipients (GRPN) this value will specify the type of group to send to. Possible values are:<br>a user defined group type<br>*ACCGRP (default) – all Acceptance Groups for all Projects for the RFP,<br>*TECGRP – all Technical Groups for all Projects for the RFP<br>*TSKASN – all assigned groups/users for all tasks for the RFP<br>*TSKREQ – all creators for all tasks for the RFP<br>*TSKTST – all test groups/users for all tasks for the RFP |
| RFP Description (RFPDSC) | The description of the RFP represented by the wildcard value of '##RFPDSC##'. |
| RFP Programmer (RFPPRG) | The programmer assigned to the RFP represented by the wildcard value of ##RFPPRG##. |
| RFP Approver (RFPAPR) | The party responsible for the approval of the RFP represented by the wildcard value of ##RFPAPR##. |
| RFP Installer (RFPINS) | The person who installed the RFP represented by the wildcard value of ##RFPINS##. |
| Project (PROJID) | The Project ID represented by the wildcard value of '##PROJID##'. |
| Project Title (PRJTIT) | The Project ID description represented by the wildcard value of '##PRJTIT##'. |
| Project Requester (PRJREQ) | The Project Requester represented by the wildcard value of ##PRJREQ##. |
| Project Programmer (PRJPRG) | The Project Programmer represented by the wildcard value of ##PRJPRG##. |
| Project Authorizer (PRJAUT) | The person who Authorized the Project represented by the wildcard value of ##PRJAUT##. |
| Project Approver (PRJAPR) | The person who Approved the Project represented by the wildcard value of ##PRJAPR##. |
| Object Library (OBJLIB) | The Object Library represented by the wildcard value of '##OBJLIB##'. |
| Object Name (OBJNAM) | The name of the object represented by the wildcard value of '##OBJNAM##'. |
| Object Type (OBJTYP) | The IBMi object type represented by the wildcard value of ##OBJTYP##. |
| Source Library (SRCLIB) | The source library name represented by the wildcard value of ##SRCLIB##. |
| Source File (SRCFIL) | The source file name represented by the wildcard value of ##SRCFIL##. |
| Attribute (ATTRIB) | The MDCMS Attribute represented by the wildcard value of '##ATTTRIB##'. |
| Object Requester (OBJREQ) | The person who requested the object represented by the wildcard value of ##OBJREQ##. |
| Request Reason | The reason for the object request represented by the wildcard value of ##REQRSN##. |

**Mail Body Wildcard Parameters that are not part of MDMAILF Command**

| | |
|---|---|
| ##SYSTIT## | The System Title that displays at the top of each MDCMS screen. This title is set per system in the System Settings |
| ##WFLURL## | The URL to the MDWorkflow web application. This is set in the email settings |
| ##WFLLOC## | The MDWorkflow System Location ID. This is set automatically in the Synchronization Settings. |